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Putting Arizona Education Reform to the Test: School Choice and Early Education Expansion

by Matthew Ladner, Ph.D., Vice President of Policy, Goldwater Institute

EXECUTIVE SUMMARY

Two major reform strategies dominate the education reform debate in Arizona: first, the expansion of public school early childhood education, and second, the expansion of parental choice in education. Preschool enthusiasts say that preschool results in higher student achievement. In her second State of the State address, Arizona governor Janet Napolitano asserted:

The data is simply overwhelming that the combination of quality childcare and full-day kindergarten will reap rewards many times the financial investment we make now. Our children will be better prepared to learn, they will be less likely to drop out of high school, and they will have higher academic achievement if we start them off on a stronger footing.¹

School choice supporters believe that when schools have to compete for students, student achievement improves, even for students remaining in the public school system.

Arizona policymakers have tried both strategies in recent years, making it possible to empirically examine how successful the strategies have been. Examining test score data from Pima County elementary schools and early education survey data from school districts across Arizona, this study evaluates the relative efficacy of the preschool and school choice strategies.

The data show that students in schools with all-day kindergarten programs have statistically significant higher 3rd-grade test scores, but there is no impact on 5th-grade scores. This finding is consistent with previous research. Schools facing significant competition for students, whether through public or private options, demonstrate significant test score gains.

The findings of this empirical analysis demonstrate that early childhood education expansion is an expensive reform that delivers only transitory benefits. School choice uses resources more efficiently and delivers improved academic achievement.

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I N S T I T U T E

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Education Reform: Early Childhood Education and School Choice

Any discussion of education reform should begin with a clear understanding of the central problem facing our public education system: a severe decline in the productivity of education spending in recent decades.

Despite spending an average \$8,500 per public school student, Arizona's 4th-grade illiteracy rate is 26 percent higher than the national average.

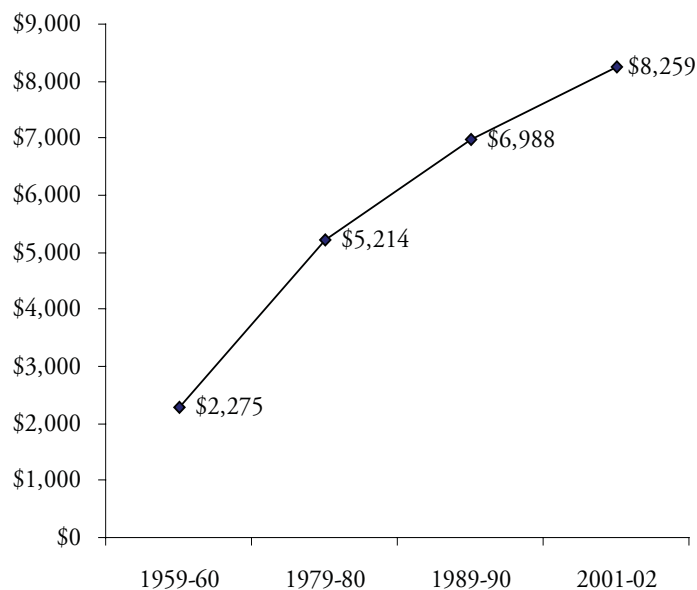
Attempted public school reforms have ranged from the absurd (e.g., open classrooms) to the deeply controversial and possibly counterproductive (e.g., “new math” and “whole language” reading). As the “reforms” pile up, government-school spending races ahead. Figure 1 presents U.S. Department of Education data tracking inflation-adjusted spending per pupil from 1959 to 2001.

Decades of increased spending have done little to improve academic performance. Between 1967 and 1994, national real spending per pupil increased from \$3,500 to \$7,000 while average SAT scores dropped 50 points. Over the same period, scores on the National Assessment of Educational Progress (NAEP), known as the “Nation’s Report Card,” remained generally flat, as demonstrated in Figure 2.

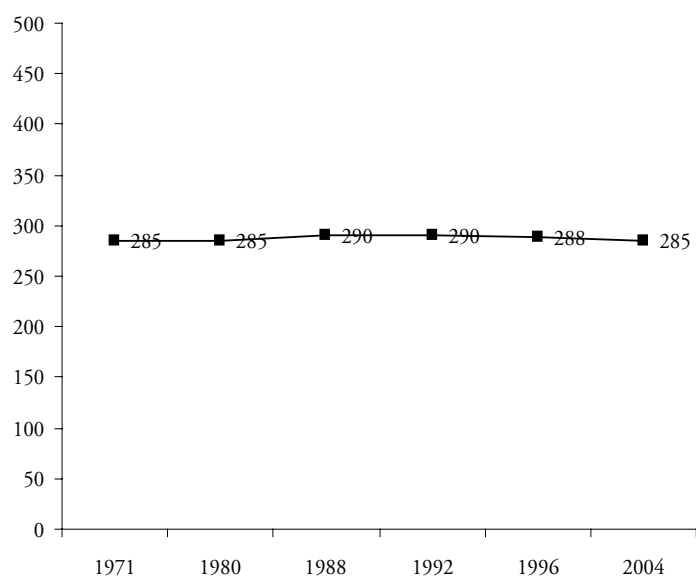
Students suffered the most from this late 20th-century collapse. The most recent NAEP reading exam found, for example, that 38 percent of American public school 4th graders scored “below basic” on reading.

Arizona is far from immune to these problems. Forty-eight percent of Arizona public school 4th graders score below basic in reading. Despite spending an average \$8,500 per public school student, Arizona’s 4th-grade illiteracy rate is 26 percent higher than the national average. A breakdown of these results by ethnicity only raises the level of alarm. Sixty-three percent of Arizona Hispanic students score below basic on reading, and 67 percent of Arizona’s African-American students score below basic. With 30 percent of Arizona’s white 4th graders scoring below basic, the state suffers from both large racial achievement gaps and alarmingly poor results among whites.² The trends in overall 4th-grade reading scores have been generally flat across ethnic groups since 1992, with small improvements in scores among whites but larger declines among Hispanics and African-Americans.

This study evaluates the prospects for two respective education reform agendas in Arizona: early childhood education expansion and school choice. These reform programs are not mutually exclusive. In fact, both strategies can be and have been implemented in Arizona. This paper reviews the academic evaluations of both early childhood expansion and school choice and then uses test score data from hundreds of Arizona public elementary schools to empirically examine the respective impacts of early childhood education and school choice.

Figure 1: Real Spending Per Pupil in American Public Schools

Source: U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics, 2004*, Table 168, "Current Expenditure Per Pupil in Average Daily Attendance in Public Elementary and Secondary Schools, by State or Jurisdiction: Selected Years, 1959-60 to 2001-02," http://nces.ed.gov/programs/digest/d04/tables/dt04_168.asp.

Figure 2: Average NAEP Reading Scores, 17-year-olds, 1971-2004

Source: U.S. Department of Education, National Assessment of Educational Progress, Long Term Trend, available at <http://nces.ed.gov/nationsreportcard/ltt/>.

Research on Early Childhood Education

One education reform strategy is to expand early childhood education programs. Arizona governor Janet Napolitano has made state funding for all-day kindergarten the centerpiece of her education agenda, laying out the case in her second State of the State address:

The data is simply overwhelming that the combination of quality childcare and full-day kindergarten will reap rewards many times the financial investment we make now. Our children will be better prepared to learn, they will be less likely to drop out of high school, and they will have higher academic achievement if we start them off on a stronger footing.³

The basic theory behind the preschool agenda is that starting children earlier in the public school system will improve academic outcomes. Governor Napolitano seems to follow this thinking, stating,

In the early years, children need access to quality preschool, and all parents must have the option to send their children to preschool programs, regardless of their income level. Experience has shown that children who form the foundations of learning in preschool excel in kindergarten, the first grade, and beyond. They are far less likely to repeat grades in the elementary school, and even less likely to drop out of high school.⁴

Research on the long-term academic effects of early childhood education programs, however, does not substantiate the governor's sanguine conclusions. The National Center for Education Statistics' Early Childhood Longitudinal Study, Kindergarten Class of 1998-99 (ECLS-K) assessed 22,000 kindergarteners and followed their academic progress through 3rd grade. The study is the most informative study ever conducted on the effects of early childhood education. Using a nationally representative sample of children and conducting a longitudinal and multivariate analysis enabled researchers to measure dozens of variables and isolate the impact of kindergarten programs.

The ECLS-K research shows the same pattern hundreds of other early education studies document: children in full-day kindergarten have a modest academic edge over children in half-day kindergarten when measured at the end of the kindergarten year.⁵ However, that small difference disappears by the end of the 3rd-grade year.⁶

Although some advocates for preschool claim a variety of long-term social benefits from preschool attendance, such as lower adult crime, higher earnings and wealth, lower welfare dependence, and greater commitment to marriage, such claims lack plausibility in the face of the fact that no academic benefit can be demonstrated by late elementary school.⁷

Occam's razor—the principle of logic that holds that, when deciding between contending theories, the simpler explanation is more likely to be

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correct—cuts decisively against preschool advocates. A theory to explain why preschool shows no lasting academic gains in late elementary school but a variety of wide-ranging, long-term social benefits would have to be complicated. A small effect that fades but triggers a large delayed reaction would fit the bill. The most elegant explanation for why no study has established any lasting academic benefit is that the studies claiming long-term benefits are in all likelihood flawed.⁸

Research On School Choice

School choice is a separate reform agenda for improving Arizona public schools. Choice advocates argue that the traditional public school model is a system of government-run quasi-monopolies. They believe that government has a captive audience in parents who lack the resources to move to a relatively high-performing school district or pay private school tuition in addition to their public school taxes. Key to improving public school performance, therefore, is breaking the government's education monopoly and introducing competition between schools. According to school choice advocates, competition is a powerful incentive for public schools to make better use of resources and to improve academic performance.

High-quality control group studies of the effects of school vouchers show a consistent pattern of small but cumulative academic gains for children participating in choice programs. Other positive effects include much higher parental satisfaction, improved racial integration, increased tolerance, and improved civic values.⁹

For many, the desirability of school choice hinges on how choice affects the traditional public school system. Gains among choice participants, after all, could be undone if such a system harms the academic progress of students remaining in traditional public schools. Choice advocates hold that traditional public schools would improve performance in a competitive environment, while opponents believe that public schools would falter under the pressure of having money “drained from the public system.”¹⁰

How school choice affects public schools is one of the most important research questions. The amount of empirical literature on the subject is limited but growing. Evaluations of the privately financed Horizon voucher program, which offered school vouchers to all children in the Edgewood School District in San Antonio, Texas, have found both academic gains and a decided lack of financial pain for the school district.¹¹

In her 2001 study “The Rising Tide,” Harvard economist Caroline M. Hoxby examined the impact of Arizona charter schools on traditional public schools.¹² Specifically, Hoxby compared the achievement gains in public schools losing 6 percent or more of their enrollment to charter schools with achievement gains in public schools in less competitive environments. Hoxby found that in public schools facing high levels of competition from charter schools, gains in 4th-grade reading scores were four times larger than those of other public schools. Similarly, academic gains were three times larger in 4th-grade mathematics, seven times

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larger in 7th-grade reading, and three times larger in 7th-grade mathematics.

Hoxby wrote, “Let’s compare a municipality that did face charter competition, such as Phoenix, with its affluent suburbs. If Phoenix were to maintain its faster rate of improvement, it would close the achievement gap between its students and those in its affluent suburbs in less than ten years.”

Hoxby found similar results with the Milwaukee Parental Choice Program and with charter schools in Michigan. In Milwaukee public schools heavily affected by voucher competition, reading gains were approximately twice as large as those of unaffected schools. Academic gains in science were more than twice as large, and gains in language were statistically significant. Similarly, Michigan public schools facing significant charter school competition made 4th-grade reading gains twice as large as those not facing competition, with smaller but statistically significant differences found in other subject areas and grades.

Michigan public schools facing significant charter school competition made 4th-grade reading gains twice as large as those not facing competition.

Does Competition for Students Improve Academic Outcomes?

Arizona policymakers have both expanded early childhood education programs and implemented school choice measures in recent years. Arizona public schools therefore present a unique opportunity to empirically measure the impact of each of these reform agendas. These reform strategies are not mutually exclusive, since both can be and have been

pursued simultaneously. Measuring their respective impacts, however, can provide valuable information. Do the performance data suggest that we should continue to pursue both reform agendas? One of them, but not the other? Perhaps neither of them?

The academic and school characteristics data for this evaluation were drawn from www.GreatSchools.net and include 93 traditional public schools in the Tucson area. Additional enrollment trend information for each school was added from the Arizona Department of Education (ADE). Using these ADE enrollment figures, schools were divided into those facing significant competition for students and those not facing significant competition, according to the Hoxby standard. Schools showing a 6 percent or greater enrollment decline between 2001 and 2004 qualify as facing high levels of competition for students. Twenty-five of the 93 Tucson public schools fell in this category, while the 68 not facing significant competition constitute our comparison group.

For purposes of this study, it does not matter whether parents avail themselves of charter schools, other public schools through transfer options, private schools, or home schools. Given Arizona’s rapidly expanding student population, it is not only possible but normal for public schools to show growing enrollments despite the availability of other options. Through open enrollment, schools can gain students to make up for losses. A declining enrollment, in short, is a serious sign of trouble in fast-growing Arizona. Hoxby’s research indicates that Phoenix schools responded

positively to the challenge.

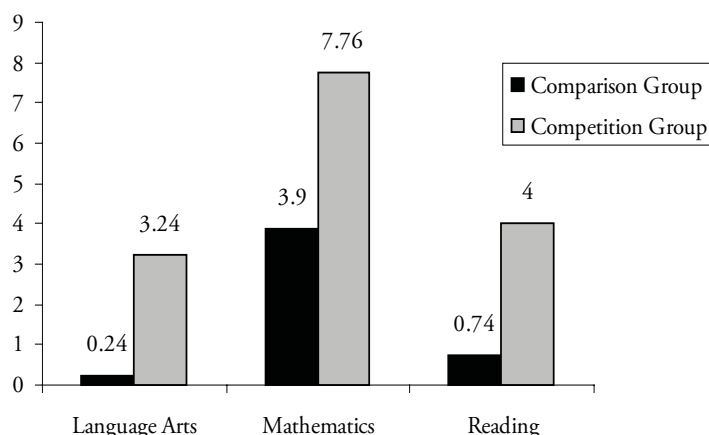
This analysis replicates the Hoxby research with a different set of schools (Pima County as opposed to Phoenix) and from a more recent time period. Figure 3 illustrates the average national percentile ranking gains made by these two groups of Tucson schools during the 2001-2004 period. In Stanford 9 Reading scores, Tucson-area public schools facing competition gained an average four national percentile points, while the comparison group's gains averaged less than one national percentile. Overall, the gains of the competition group were approximately 5.4 times larger than those of the comparison group. In mathematics, Tucson public schools facing competition for students made Stanford 9 gains approximately twice as large as those of the comparison group.

The competition group's gains on the Stanford 9 Language Arts exam are more than 13 times greater than the comparison group's gains, as illustrated in Figure 3. The academic gains of schools facing competition for students are similar to those found by Hoxby. These differences in scores look impressive, but they must be subjected to a multivariate analysis before drawing conclusions. A regression analysis can establish whether these differences are of sufficient size to be statistically significant and can also statistically control for a variety of other factors that may explain the differences between these two sets of schools.

For example, it is possible that the schools facing greater competition also have a smaller percentage of economically disadvantaged students than the

Tucson public schools facing competition for students made Stanford 9 gains approximately twice as large as those of the comparison group.

Figure 3: Relative 5th Grade Stanford 9 National Percentile Ranking Gains for Pima County Public Schools



Source: www.Greatschools.net; author calculation.

Table 1: Impact of Competition on Stanford 9 Reading, Mathematics, and Language Arts Gains, 2001-2004

	Reading Gains	Mathematics Gains	Language Arts Gains
Competition	4.55 (1.93)*	5.54 (2.45)*	4.25 (1.78)**
Percentage of students eligible for free or reduced lunch	-7.04 (9.68)	-12.58 (12.31)	-15.99 (8.87)
Percentage of students in English Language Learner Programs	4.27 (12.36)	8.71 (15.71)	18.04 (11.3)
Percentage of white students	7.78 (20.59)	-9.26 (26.17)	-1.14 (18.04)
Percentage of Hispanic students	20.99 (17.27)	8.25 (21.96)	16.12 (16.12)
School attendance rate	121.26 (116.94)	229.56 (148.61)	148.17 (107.18)
Student-teacher ratio	-0.10 (0.18)	0.32 (0.26)	0.09 (0.18)
Percentage of teachers with seven or more years experience	-3.47 (6.63)	-17.10 (8.43)*	-10.81 (6.07)
Percentage of teachers with a master's degree	-2.56 (6.08)	3.27 (7.73)	3.53 (5.57)
R-square	0.17	0.19	0.29

Sources: www.GreatSchools.net; Arizona Department of Education.

Notes: Ordinary least squares regression; entries are unstandardized coefficients; standard errors are in parentheses. *p < 0.05, **p < 0.01.

comparison group schools have. It is also possible that they otherwise vary in the demographic profile of students or teachers. Perhaps these schools had more experienced teaching staffs or lower teacher-student ratios. Fortunately, the regression technique allows us to separately control for each of these factors while still including an independent variable for competition, again measured as the decline in enrollment. Table 1 presents the results for three regression models, using the respective score gains on Stanford 9 Reading, Mathematics, and Language Arts as the dependent variables. The competition variable displays a consistent statistically significant relationship with national percentile ranking gains in all three academic areas. Meanwhile, the various student demographic variables (poverty and ethnicity), teacher characteristic variables (teacher experience and education), and the student-teacher ratio variable all fail to demonstrate a significant relationship with academic gains. The only other significant result is for the percentage of teachers with seven or more years' experience in mathematics, but it is a negative result (meaning that schools with more experienced teachers had lower gains on mathematics scores).

A similar analysis of 408 Phoenix-area elementary schools (not shown here) also found significantly higher academic gains on Stanford 9 Reading, Mathematics, and Language Arts, exams during the 2001-2004 period.¹³ Collectively, these results strongly reinforce the findings of Hoxby's 2001 research in showing that competition for students creates positive pressure on schools to improve academic performance.

When faced with such competition, schools in both Tucson and Phoenix improved their academic outcomes at a significantly faster rate than schools not facing competition.

Do Early Childhood Education Programs Improve Academic Outcomes?

To evaluate the effectiveness of various early education programs, data from GreatSchools,¹⁴ similar to those above, were combined with a survey of 260 Arizona schools concerning what early education programs they offered and in what years. These data about past program offerings were then matched with test score data from academic evaluations in subsequent years. For example, we have 3rd-grade test results from the 2004-2005 school year. By combining those results with data about the availability of full-day kindergarten programs in 2001-2002, we can evaluate whether such programs are associated with higher test scores. Likewise, we have 5th-grade results from 2004-2005. Combined with kindergarten data from the survey of school districts, we can evaluate whether early childhood programs (in this case, the availability of all-day kindergarten in 1999-2000) resulted in higher 5th-grade test scores in 2004-2005.

The first thing to know, as a matter of practical significance, is whether full-day kindergarten programs show the ability to raise test scores. We address this question by first examining Terra Nova Mathematics and Reading scores from the 2004-2005 school year, matched against the availability

When faced with competition, schools in both Tucson and Phoenix improved their academic outcomes at a significantly faster rate than schools not facing competition.

Table 2: Impact of All-day Kindergarten on Subsequent 3rd-grade Terra Nova Exams, 2004-2005

	Terra Nova Mathematics	Terra Nova Reading
Full-day kindergarten program available, 2001-2002	5.36 (2.19)**	3.85 (1.61)**
Percentage of students eligible for a free or reduced lunch	-13.35 (8.46)	-15.72 (6.19)**
Percentage of white students	18.27 (8.60)*	30.45 (6.31)***
Percentage of teachers with seven or more years' experience	1.195741 (8.07)	6.81 (5.92)
Student attendance rate	56.40 (59.67)	100.66 (43.90)*
Percentage of teachers with a master's degree	19.84 (7.53)***	8.64 (5.53)
R-square	0.42	0.68

Source: www.GreatSchools.net; Arizona Department of Education.

Notes: Ordinary least squares regression; entries are unstandardized coefficients; standard errors are in parentheses. *p < 0.05, **p < 0.01 ***p < 0.001.

of all-day kindergarten programs from the 2001-2002 school year. The Terra Nova data include national norm-referenced questions and scores from the Arizona's Instrument to Measure Standards (AIMS) exams.

We use these data to determine whether there is evidence that student cohorts have higher test scores three years after full-day kindergarten in an Arizona elementary school. Table 2 presents the

results of two regression models using Terra Nova Mathematics and Reading scores (respectively) as dependent variables and includes the availability of full-day kindergarten as an independent variable. Various other independent variables were included as control variables.

Schools with all-day kindergarten programs in 2001-2002 showed significantly higher 3rd-grade Terra Nova Mathematics and Reading scores in 2004-

Table 3: Impact of All-day Kindergarten on Subsequent 5th-grade AIMS Passing Rates, 2004-2005

	AIMS Mathematics	AIMS Reading
Full-day kindergarten program provided, 1999-2000	0.01 (0.02)	0.01 (0.01)
Percentage of students in English Language Learner Programs	-0.11 (0.12)	-0.06 (0.10)
Percentage of students eligible for a free or reduced lunch	-0.22 (0.09)*	-0.20 (0.07)***
Percentage of white students	-0.01 (.10)	0.13 (0.08)
Percentage of teachers with seven or more years' experience	0.18 (0.09)	0.16 (0.07)*
Student attendance rate	0.32 (0.68)	0.42 (0.58)
Percentage of teachers with a master's degree	0.14 (0.08)	0.08 (0.07)
R-square	0.41	0.56

Source: www.GreatSchools.net; Arizona Department of Education.

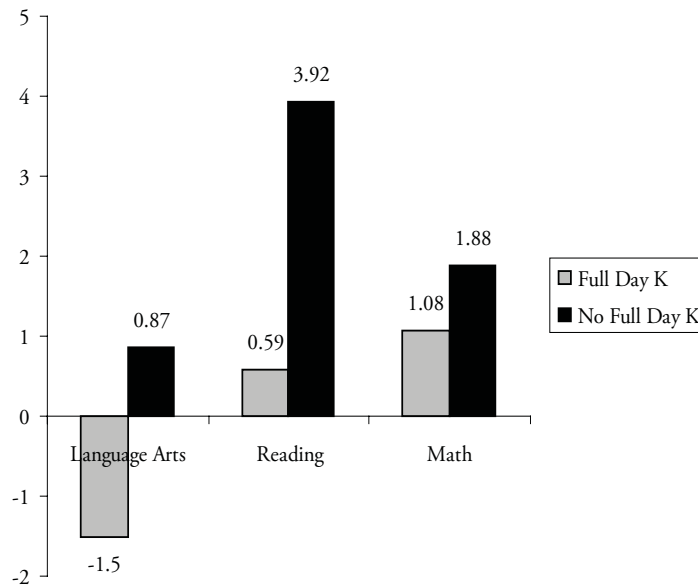
Notes: Ordinary least squares regression; entries are unstandardized coefficients; standard errors are in parentheses. *p < 0.05, **p < 0.01, ***p < 0.001.

2005. This result is consistent with the findings of earlier research that show early grade improvements associated with early childhood education.

Table 3 presents regression analysis models that demonstrate whether those early academic gains have staying power. The dependent variables of these regression models are the passing percentages for 5th-

grade AIMS Mathematics and Reading exams in the 2004-2005 school year. The independent variable of interest is the availability of a full-day kindergarten program during the 1999-2000 school year.

In contrast with the 3rd-grade Terra Nova results, the availability of full-day kindergarten programs was not associated

Figure 4: National Percentile Ranking Gains and Losses for 5th Grade Students

Source: www.Greatschools.net; author calculation.

The data demonstrate that the academic impact of early childhood programs in Arizona fades by late elementary school and thus will not produce any sort of long-term benefits.

with higher 5th-grade AIMS passing rates. This result is fully consistent with the “fade out” in academic benefits that previous research has noted.

In addition to not improving AIMS passing rates, elementary schools offering full-day kindergarten programs also failed to improve Stanford 9 Reading, Mathematics, and Language Arts scores, as demonstrated in Figure 4.

The current trend of early education policy is toward state funding for all-day kindergarten programs. The above results promise nothing in the way of lasting academic results for such efforts. Moreover, state funding for all-day kindergarten does not expand access to kindergarten as much as it simply obliges state taxpayers to fund an activity local school districts already

provide. Some districts may choose to use funds currently dedicated to kindergarten to expand prekindergarten programs. While state funding for kindergarten is ineffectual in and of itself, diverting the funds to prekindergarten programs might still prove academically beneficial if preschool programs lead to long-term academic gains.

Table 4 presents the results of regression models using 2004-2005 AIMS passing rates as dependent variables. Independent variables of interest code schools as having all-day and half-day preschool programs available during the 1998-1999 school year. The 1998-1999 preschool cohort moved to 5th grade in 2004-2005, allowing us to measure the ability of preschool programs to affect academic outcomes in the medium term.

Table 4: Impact of Preschool on Subsequent 5th-grade AIMS Passing Rates, 2004-2005

	AIMS Mathematics	AIMS Reading
Full-day preschool program available, 1998-1999	-0.01 (0.12)	0.04 (0.10)
Half-day preschool program available, 1998-1999	-0.001 (.02)	0.004 (0.02)
Percentage of students in English Language Learner Programs	-0.11 (0.13)	-0.05 (0.10)
Percentage of students eligible for a free or reduced lunch	-0.22 (0.09)*	-0.21 (0.08)**
Percentage of white students	-0.01 (.10)	0.13 (0.08)
Percentage of teachers with seven or more years' experience	0.18 (0.09)	0.15 (0.08)*
Student attendance rate	0.32 (0.69)	0.49 (0.58)
Percentage of teachers with a master's degree	0.13 (.09)	0.07 (0.07)
R-square	0.41	0.56

To improve educational outcomes for its graduating seniors, Arizona will have to focus on improving the quality of elementary and secondary instruction. The benefits of adding grades in the early years have proven not to last beyond the elementary years.

Sources: www.GreatSchools.net; Arizona Department of Education.

Notes: Ordinary least squares regression; entries are unstandardized coefficients; standard errors are in parentheses. *p < 0.05, **p < 0.01.

Public preschool programs, like all-day kindergarten programs, show no impact on academic results of late elementary school students. The data demonstrate that the academic impact of early childhood programs in Arizona fades by late elementary school and thus will not produce any sort of long-term benefits. This result is also consistent with the finding of fading benefits associated with early education programs. To improve educational outcomes for its graduating seniors, Arizona will have to focus on improving the quality of elementary and secondary instruction. The benefits of adding grades in the early years have proven not to last beyond the elementary years.

Conclusion: The Way Ahead for Arizona Education Reform

This analysis shows that the expansion of school choice can improve academic achievement. Additionally, school choice expansion can be accomplished with existing resources, and may even save taxpayers money.

Some claim Arizona already has school choice in the form of charter schools and the scholarship tax credit. For example, Governor Napolitano once stated,

I support school choice. Arizona has one of the nation's largest populations of charter schools, and parents have a wide variety of choices available to them for their children's education. I believe that this system is sufficient to

provide for adequate school choice without utilizing additional public resources for a state-sponsored voucher system.¹⁵

The ever-increasing student population in the state, however, brings into question the adequacy of public school choice. Despite the existence of 500 or so charter schools, for example, many areas of the state continue to struggle to build new public schools fast enough. In 1993, the year before charter schools began operating in the state, Arizona had 709,453 K-12 students. Ten years later, the state had 1,012,068 students, an increase of 302,615. The fact that almost 97,000 students had enrolled in charter schools by 2005 was of real but limited value in creating healthy competition in the public school system.

Even some of the worst-performing public schools in the state are able to carry on relatively unaffected by the current school choice options available. Consider the Roosevelt Elementary District in South Phoenix. Fourteen Roosevelt elementary schools scored in the bottom 10 percent of schools in either reading, math, or both on national norm-referenced tests. Of the four district elementary schools that scored higher, none scored above the 30th percentile in reading or math. Published parent reviews of Roosevelt schools express deep concerns about a lack of discipline and instability of leadership.¹⁶ The president of the Roosevelt school board has even admitted, "incompetency protects incompetency in this district."¹⁷

Roosevelt, in short, is an academic disaster. In 1993-1994, before the

creation of charter schools, the Roosevelt Elementary District had 11,186 students; in 2003-2004, the district had 11,750 students. The impact of interdistrict choice, charter schools, and tax credits have been more than compensated for by the growth in student population in the south Phoenix area. In theory, interdistrict choice and charter schools should provide options to distressed parents in districts such as Roosevelt, but in reality, area charter schools have long waiting lists, and neighboring school districts lack available space for transfers. Ultimately, the Roosevelt Elementary District performs so poorly because it can do so without meaningful consequence.

A good start to expanding choice would be to take advantage of the estimated 26,000 empty private school seats available statewide through expanded tax-credit or voucher mechanisms.¹⁸ Charter schools have proven their worth by producing a faster rate of academic growth for their students and by forcing traditional public schools to compete. Even the rapid growth of charter schools in Arizona, however, has only nominally released the pressure of an ever-increasing student population. Failing to make use of empty seats in private schools while children remain trapped in dysfunctional public schools moves into the realm of the unconscionable.

Ultimately, simply taking advantage of the stock of empty seats in existing private schools, while highly desirable, will prove insufficient. If Arizona policymakers are to serve the public interest, it will be necessary to quicken the pace of new charter and private school creation. The best way to

accomplish this goal would be to create a voucher program that gives parents enough purchasing power to facilitate the expansion of the private school market.

Expansion of Arizona early childhood education, meanwhile, is an expensive reform with a limited ability to deliver long-term academic improvement. The expansion of early childhood programs in public schools should be the last chapter in the public school system's history of spending more resources without a resulting improvement in academic outcomes.

As the data show, school choice is a far more effective education reform strategy than early childhood education programs. Arizona spends approximately \$8,500 per public school student—more than enough to produce quality outcomes—yet 48 percent of Arizona 4th graders score “below basic.” Spending education dollars on proven reforms will help put Arizona students on the path to academic success.

NOTES

1. Janet Napolitano, “State of the State Address, 46th Legislative Session,” speech presented in Phoenix, January 12, 2004. Care should be taken to note, however, that the governor’s plan does not expand access to kindergarten as much as it simply obliges state taxpayers to fund an activity local school districts already provide. Some districts may choose to use funds currently dedicated to kindergarten to expand prekindergarten programs.

2. Arizona scores on the NAEP examinations can be accessed online at <http://nces.ed.gov/nationsreportcard/states/profile.asp>.

3. Janet Napolitano “State of the State Address, 46th Legislative Session,” speech presented in Phoenix, January 12, 2004. Care should be taken to note, however, that the governor’s plan does not expand access to kindergarten as much as it simply obliges state taxpayers to fund an activity local school districts already provide. Some districts may choose to use funds currently dedicated to kindergarten to expand prekindergarten programs.

4. Janet Napolitano, “Remarks to Supporters of the National Task Force on Public Education,” speech presented in Washington, D.C., April 22, 2004, <http://www.governor.state.az.us/speeches/04-04-22%20Education%20Task%20Force.htm>.

5. Jerry West, Kristin Denton, and Elizabeth M. Reaney, “The Kindergarten Year: Findings from the Early Childhood Longitudinal Study, Kindergarten Class of 1998-99” 2001, Tables 2 and 44, nces.ed.gov/pubs2001/2001023.pdf.

6. Amy Rathburn, Jerry West, and Elvira Germino-Hausken, “From

Kindergarten through Third Grade: Children’s Beginning School Experiences,” U.S Department of Education, National Center for Education Statistics, NCES 2004-007, August 2004, p. 33, nces.ed.gov/pubs2004/2004007.pdf.

7. See W. Steven Barnett, “Research on the Benefits of Preschool Education: Securing High Returns from Preschool for All Children,” briefing, National Institute for Early Education Research, January 10, 2006, <http://nieer.org/resources/files/Benefits.pdf>.

8. See Darcy Olsen, “Assessing Proposals for Preschool and Kindergarten: Essential Information for Parents, Taxpayers, and Policymakers,” Goldwater Institute Policy Report no. 201, February 8, 2005, <http://www.goldwaterinstitute.org/article.php?/920.html>.

9. Jay P. Greene, “A Survey of Voucher Results: Where We Are and What We Know,” Manhattan Institute for Policy Research Civic Report no. 11, July 2000, http://www.manhattan-institute.org/html/cr_11.htm.

10. For a typical example of this argument, see Office of U.S. Senator Patty Murphy (D-Wash.), “Murray Helps Defeat School Voucher Amendment: Senator Speaks against Voucher Proposal,” press release, June 12, 2001, <http://murray.senate.gov/news.cfm?id=189430>.

11. See Jay P. Greene and Greg Forster, “Rising to the Challenge: The Effect of School Choice on Public Schools in Milwaukee and San Antonio,” Manhattan Institute for Policy Research Civic Bulletin no. 27, October 2002, http://www.manhattan-institute.org/html/cb_27.htm. See also Jennifer O. Aguirre and Matthew Ladner, “Choice, Progress &

Change: School Choice and the Hispanic Education Crisis,” Children’s Educational Opportunity Foundation, undated, <http://www.hcreo.org/pdfs/CEO%20Report.pdf>.

12. Caroline Minter Hoxby, “The Rising Tide,” *Education Next*, no. 4, Winter 2001, <http://www.educationnext.org/20014/68.html>.

13. Of the 408 schools in the Phoenix sample, only nine elementary schools endured a loss of more than 6 percent of students between 2001 and 2004. While the Phoenix schools facing this level of competition made significantly greater gains on the Stanford 9 Language Arts, Mathematics, and Reading scores in comparison to the other schools, the greater percentage of Tucson schools facing such competition made for a more robust test of the competition hypothesis.

14. GreatSchools, a national, independent nonprofit organization committed to helping parents choose schools, compiles data from government sources in addition to collecting its own information.

15. Janet Napolitano campaign website, www.GoJanet.org, “Issues,” September 9, 2002.

16. Parental reviews of schools are available to subscribers on www.GreatSchools.net.

17. Pat Kossan and Betty Reid, “State Takes on a Phoenix School District,” *Arizona Republic*, April 30, 2006, <http://www.azcentral.com/families/education/articles/0430a-roos0430sundayintro.html>.

18. Vicki Murray and Ross Groen, “Survey of Private Schools: Tuition, Testing, and Curricula,” Goldwater Institute Policy Report #1999, January 5, 2005, <http://www.goldwaterinstitute.org/article.php?/506.html>.

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